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THE EUROPEAN UNION'S AMBITIONS IN AI*

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The term artificial intelligence (hereinafter referred to as artificial intelligence or AI) is becoming more and more common in our everyday lives. In most cases, technological and technical developments come first but if you look more closely at this issue we can conclude that its meaning is much more than we first thought. In this study I intend to address the major milestones of the European Union's Artificial Intelligence Strategies and Regulatory Documents.

Keywords: *artificial intelligence, European Union, artificial intelligence strategies, artificial intelligence regulatory documents*

A mesterséges intelligencia (a továbbiakban: mesterséges intelligencia vagy MI) kifejezést egyre gyakrabban hallhatjuk a mindennapjaink során. A legtöbb esetben elsőként a technológiai és műszaki fejlesztések juthatnak eszünkbe, azonban, ha jobban megvizsgáljuk az említett kérdéskört, arra a megállapításra juthatunk, hogy a jelentése sokkal több annál. Jelen tanulmányban az Európai Unió mesterséges intelligenciával kapcsolatos stratégiáinak és szabályozási dokumentumainak jelentősebb mérföldköveit kívánom vizsgálat tárgyává tenni.

Kulcsszavak: *mesterséges intelligencia, Európai Unió, mesterséges intelligencia stratégiák, mesterséges intelligencia szabályozási dokumentumok*

Introductory thoughts

The term artificial intelligence (hereinafter referred to as artificial intelligence or AI) is becoming more and more common in our everyday lives. In most cases, technological and technical developments come first but if you look more closely at this issue we can conclude that its meaning is much more than we first thought.

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AI can significantly improve people's lives and bring enormous benefits for example to the society and the economy. Possible outcomes of artificial intelligence include higher quality health care, more efficient administration, faster and safer transport, more competitive industrial sectors and even sustainable agricultural activities. The list of development opportunities is almost endless.[1] AI will soon be the main engine of economic and productivity growth and will also contribute to the sustainability of the European industrial base.[2] Just like steam engines or electricity, artificial intelligence is transforming the world. If we narrow the available results slightly and focusing on practical examples already in place, artificial intelligence can be used to make more accurate and faster medical diagnoses, to perform various dangerous and repetitive tasks, to help fight cybercrime, and to minimize the use of electricity.[3]

Artificial intelligence is rapidly transforming from mere theory to reality – and of course, all of us – including Governments – need to be prepared.[4] At the international level, there is a general tendency for Governments to face significant challenges in the rapid development of artificial intelligence.[5] Countries cannot turn a blind eye to artificial intelligence because of their competitiveness and they must persuade social actors to be more open to development. Most state development is stopped by the problem of applying and regulating artificial intelligence in sensitive areas. For artificial intelligence to be a valuable asset for a Government and its citizens, it must have legitimacy and of course a broad, inclusive and supportive base.[6]

There is a general trend in Europe which clearly shows that Governments are increasingly open to the opportunities offered by artificial intelligence.[7]

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1 Hila MEHR: *Artificial Intelligence for Citizen Services and Government.* Harvard Ash Center Technology & Democracy Fellow. https://ash.harvard.edu/files/ash/files/artificial_intelligence_for_citizen_services.pdf, May 18, 2020.

2 Stuart RUSSEL – Peter NORVIG: *Mesterséges intelligencia – Modern megközelítésben.* Panem Kft., Budapest, 2005, 1040–1045.

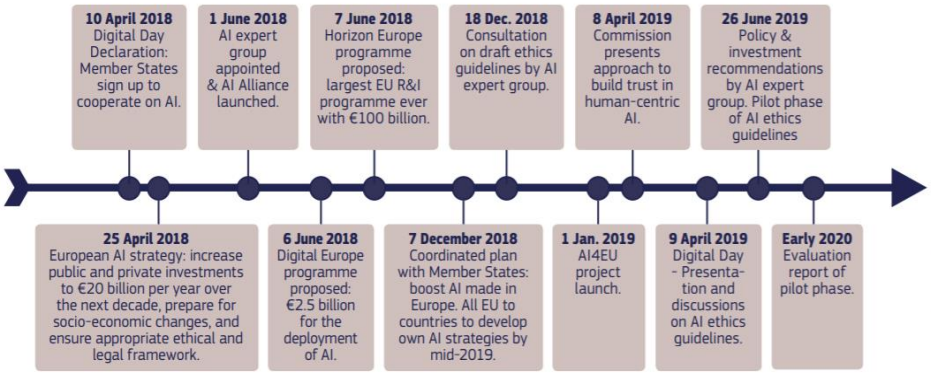
3 Tiffany Dovey FISHMAN – William D. EGGERS – Pankaj KISHNANI: *AI-augmented human services*. https://www2.deloitte.com/us/en/insights/industry/public-sector/artificial-intelligence-technologies-human-services-programs.html, December 5, 2019.

4 Bernd W. WIRTS – Jan C. WEYERER – Carolin GEYER: Artificial Intelligence and the Public Sector — Applications and Challenges. *International Journal of Public Adiminstration* Volume 42, 2019, 596–598.

5 Ugo PAGALLO: *The Law of Robots: Crimes, Contracts and Torts.* Dordrecht, Springer, 2013, 19–20. Doi:10.1007/978-94-007-6564-1.

6 William D. EGGERS – Amrita DATAR – John O'LEARY: *The future of work in government.* https://www2.deloitte.com/us/en/insights/industry/public-sector/future-of-work-in-government.html, January 2, 2020.

7 Eduardo MAGRANI: *New perspectives on ethics and the laws of artificial intelligence.* https://policyreview.info/articles/analysis/new-perspectives-ethics-and-laws-artificial-intelligence, November 10, 2019.



[8]

When we examine the application, development and regulation of artificial intelligence at the European level, we can see that the institutions of the European Union are striving to establish and create a regulatory and strategic framework at the EU level. The European Commission intends to provide an EU approach to the Member States in the field of artificial intelligence and robotics. Technological, ethical, legal, social and economic aspects all play a key role in EU research. The main goal is to bring artificial intelligence into the research, economic and industrial sectors of the European Union and to serve European citizens and the Member States.

In this study, I intend to address the major milestones of the European Union's Artificial Intelligence Strategies and Regulatory Documents.[9]

1. Investing in a smart, innovative and sustainable Industry – A renewed EU Industrial Policy Strategy

As early as September 2017, the Commission of the European Union emphasized in its Communication *Investing in a smart, innovative and sustainable Industry – A renewed EU Industrial Policy Strategy*[10] the potential and importance of applying artificial intelligence to industry. According to the Communication, artificial intelligence is one of the tools to prepare the industry for the digital age.

It also emphasizes that the age of industrialization is characterized by accelerating economic, social, and environmental transformation and technological breakthroughs in areas such as robotics, the Internet of Things, artificial intelligence, energy systems and the bioeconomy.

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8 *Digital Single Market: Artificial Intelligence for Europe*. https://ec.europa.eu/digit al-single-market/en/artificial-intelligence, January 10, 2020.

9 Due to the length of the study: this study does not cover all documents related to the development of artificial intelligence in the European Union.

10 European Commission: Investing in a smart, innovative and sustainable Industry – A renewed EU Industrial Policy Strategy COM/2017/0479 final.

In its communication, the European Commission stated that the future of the industry would be determined by digitalisation, as the digital transformation is at the heart of the ongoing industrial revolution. Developments in large data sets, artificial intelligence, robotics, the Internet of Things, high-performance computing and similar technologies are having an impact on society as a whole.[11]

With the rise of digital technologies services are gaining more importance in the industry than ever before. The integration of smart technologies into industrial value chains and their cross-border application is, therefore crucial for Europe's growth and competitiveness.

2. European Parliament recommendations to the Commission on Civil Law Rules on Robotics

The recommendation draws the attention of policymakers to the fact that humanity is on the threshold of an era in which increasingly sophisticated technology robots, bots, androids, and other manifestations of artificial intelligence could lead to a new industrial revolution. The recommendation emphasizes that the innovation process affects all sections of society and it is crucial that the legislator takes into account and creates a legal and ethical framework without holding back the innovation.

Parliament set the objective of defining generally accepted, flexible and non hindering innovation concepts of robots and artificial intelligence; the development of ethical principles to be respected in the development, programming and use of robots and artificial intelligence, and the incorporation of these principles in EU rules and codes of conduct.

It is worth emphasizing that it seeks to achieve these goals in order to help ensure that the technological revolution serves humanity, the benefits of advanced robotics and artificial intelligence are widespread and to avoid potential pitfalls. Developments suggest a gradual, pragmatic and cautious approach[12] to robotics and artificial intelligence in order not to hamper innovation processes.[13]

3. European Council conclusion EUCO 14/17.

At its meeting on 19 October 2017, the European Council adopted EUCO 14/17. conclusion emphasized[14] the need to develop an European approach to artificial intelligence.

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[11] The automation of knowledge and work, the development of robots and autonomous vehicles, are estimated to have an overall economic impact of up to 12 trillion euro per year until 2025, including productivity gains.

[12] Compare it: The Schuman Declaration: Robert Schuman 1950: *Europe will not be made all at once, or according to a single plan. It will be built through concrete achievements which* first *create a de facto solidarity*…

[13] European Parliament: *Report 27. 1. 2017 with recommendations to the Commission on Civil Law Rules on Robotics* [2015/2103(INL)].

[14] European Council: Conclusion EUCO 14/17, 11. point.

The European Council stated that the following conditions must be met in order to build a prosperous digital Europe:

- creating governments or public sectors that are fully prepared for digitization and can serve as role models for other states;
- creating a future-oriented regulatory framework;
- developing a high-quality infrastructure and communication network: which requires cooperation at EU level inter alia with a view to achieving a world-class, high-speed fixed and mobile (5) network with consistent regulatory and economic conditions by 2020;
- creating a single regulatory framework for cybersecurity;
- rapid action to respond to emerging new trends, including issues related to artificial intelligence and blockchain technologies, as well as the need for a high level of respect for data protection, digital rights and ethical standards.

The conclusions of EUCO 14/17. was a decisive step at EU level, as a result the European Council called on the Commission to present a proposal for a European approach to artificial intelligence by early 2018.

4. Digital Day – EU Declaration on Cooperation on Artificial Intelligence

On 10 April 2018, following the 2018 Digital Day event, twenty-four EU Member States and Norway signed the *EU Declaration on Cooperation on Artificial Intelligence*. The declaration aims to develop a European approach to artificial intelligence, as set out in EUCO 14/17. Conclusion. Romania, Greece and Cyprus joined the initiative in May 2018 and Croatia in July 2018. The European approach will be based on three main pillars to ensure that Europe seizes the opportunity and gives its citizens, businesses and governments control over digital transformation.[15]
In the declaration, the signatories agreed to cooperate:

- To accelerate Europe's technology and industrial capacity and to integrate artificial intelligence more effectively. Achieving this goal requires better access to public sector data, and economic growth can be achieved by creating new types of jobs and supporting innovative business models.
- Address socio-economic challenges, such as the transformation of the labor market and the modernization of European education and training systems, including the further training and retraining of EU citizens.
- Ensuring an appropriate legal and ethical framework, building on the fundamental rights and values of the EU, including the protection of privacy and personal data, as well as principles such as transparency and accountability.[16]

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[15] European Commission: *Shaping Europe's digital future*. https://ec.europa.eu/digital-single-market/en/events/digital-day-2018, November 10, 2019.

[16] European Commission: *EU Declaration on Cooperation on Artificial Intelligence*. https://ec.europa.eu/jrc/communities/en/community/digitranscope/document/eu-declaration-cooperation-artificial-intelligence, December 2, 2019.

They wanted to develop a comprehensive and integrated European approach to artificial intelligence, which the Member States undertook to update their national programs where necessary.

Stakeholders were also encouraged to work together on an ongoing basis to enable the European AI Association to grow into a diverse forum. They also sought to strengthen cooperation and common thinking between the Member States, to support research centers and set up a network of digital innovation centers at the EU level.

5. European AI Strategy – Artificial Intelligence for Europe

The Artificial Intelligence for Europe Strategy sets out the European Union's approach to the development of artificial intelligence, identifying the opportunities and challenges posed by artificial intelligence. Among other things, the Communication emphasizes that the EU must ensure that no one is left behind in the digital transformation and that AI is developed and applied based on EU values and fundamental rights.

In order to achieve these goals, a stable regulatory framework needs to be put in place, which needs to be complemented by a harmonized artificial intelligence approach at the EU level. The strategy focuses on the issue of data, given that the "raw material" for the development of artificial intelligence is data.[17]

It also examines the position of the Union in relation to US and Chinese investment. It notes that the European Union lags far behind the US and China in terms of private investment. Therefore, efforts should be made to create an investment-friendly environment and programs. Achieving this target requires the joint implementation of private and public investment by 2020 and beyond.[18]

The strategy also attaches great importance to addressing ethical issues, regulating the GDPR and the Digital Single Market and creating a legal framework for product liability and data protection. During the implementation they only wanted to create a framework that the Member States will be able to fill with content. Strengthening international relations and stimulating research activities are essential for successful implementation. The main goal of the strategy is to put the power of artificial intelligence at the service of human development.

6. AI expert group – High-Level Expert Group on Artificial Intelligence

In a conclusion adopted by the European Council on 28 June 2018[19], it called on the Commission to develop a coordinated plan for artificial intelligence in cooperation with the Member States.

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[17] European Commission: *EU Member States sign up to cooperate on Artificial Intelligence*. https://ec.europa.eu/digital-single-market/en/news/eu-member-states-sign-cooperate-artificial-intelligence, December 16, 2019.

[18] European Union: *Declaration of Cooperation on AI*. April 10, 2018, Brussel.

[19] Council of the European Union: 8507/18. http://data.consilium.europa.eu/doc/document/ST-8507-2018-INIT/en/pdf, January 3, 2020.

The overall objective of the High Level Expert Group on Artificial Intelligence (AI HLEG)[20] is to support the implementation of the European Artificial Intelligence Strategy. This includes developing future policies and making recommendations on ethical, legal and social issues related to AI. Following an open selection process, the Commission appointed fifty-two experts to the High Level Expert Group on Artificial Intelligence, composed of representatives from academia, civil society and industry.

In the year following its establishment, the AI HLEG developed ethical guidelines for artificial intelligence and policy and investment recommendations. The ethical guidelines set out a people-centered approach to artificial intelligence and list seven key requirements that AI systems must meet in order to be trustworthy. These requirements go through a testing process to demonstrate their necessity and effectiveness. The group made thirty-three recommendations for policy and investment recommendations, which can lead to reliable artificial intelligence towards sustainability, growth and competitiveness and inclusion with a particular focus on protecting people.

AI HLEG is also the steering group of the European Artificial Intelligence Association, which aims to provide a forum for discourse on the development of artificial intelligence and its economic and social impact. Forums provide an opportunity for public, market and social actors to reconcile their interests.

7. Digital Europe

The digital transformation impacts all sectors of the economy and transforms the way we live, work, and communicate. Much as our transport, industrial infrastructure, education, and high-quality public services have ensured Europe's prosperity in the past, investments in strategic digital capacities and infrastructures, upskilling and modernising the interaction between governments and citizens will underpin our future prosperity.

The current EU investment framework covers essential aspects of these pillars and notably research and innovation. However, lessons learned from successful public policies for high tech areas show that, in addition to research and innovation, public action to support "upstream input" in rapidly developing technology fields can be instrumental for generating value while addressing public sector needs.[21]

The fundamental goal of the Digital Europe Strategy is to create European data spaces that aggregate public information from across Europe and serve as a data entry source for artificial intelligence developments. They want to make the data

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[20] European Commission: *High-Level Expert Group on Artificial Intelligence*. https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence, December 20, 2019.

[21] European Commission: *Regulation of the European Parliament and of the Council establishing the Digital Europe programme for the period 2021–2027*. COM(2018) 434 final, 2018/0227(COD) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A434%3AFIN, January 4, 2020.

spaces available to both public and private actors. In order to increase use, it is necessary for the data in a given space to be as interoperable as possible in terms of public-private interactions, as well as within and between sectors – ie to meet the requirement for semantic interoperability.

In the interests of effective development, the aim is to establish reference sites with which experimentation and testing can be carried out under real conditions. They intend to focus on the application of artificial intelligence in critical sectors such as health, the environment, mobility, security, production and finance, as well as other areas of public interest. These "pilot sites" would be open to all across Europe and connected to the network of Digital Innovation Centers. They must be equipped with significant computing and data management devices and have the latest artificial intelligence technologies, including new areas such as neuromorphic computing, deep learning and robotics.

Overall, the objectives of the strategy focus on the following key elements:

1. Building and strengthening core capabilities for artificial intelligence, including data sources and algorithm libraries in line with data protection legislation in the Union.
2. Ensuring access to such capacities for all businesses and administrations.
3. Ensure that the essential capacities needed to secure the EU's digital economy, society and democracy are present and accessible to the EU's public sector and businesses, and improve the competitiveness of the EU's cybersecurity industry.
4. Strengthening and networking of existing artificial intelligence testing and experimentation facilities in the Member States.

8. Coordinated plan – Coordinated Plan on Artificial Intelligence

On 7 December 2018, the European Commission presented a Communication to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions entitled *Coordinated plan on Artificial Intelligence*.

Artificial intelligence has been high on the EU Council's agendas since the Estonian Presidency's Digital Summit in September 2017. After all, only cooperation between the Member States and the Commission can enable Europe to make the vision it dreams come true. The coordinated plan builds on the "Declaration of Cooperation" launched in the context of the 2018 Digital Day, signed by all Member States and Norway, which emphasizes the intention for closer cooperation on artificial intelligence.

The main objectives of the coordinated plan are to maximize the impact of investments at the EU and national level, to encourage synergies and cooperation across the EU and to facilitate the exchange of best practices. In order to adapt to the rapid pace of change brought about by artificial intelligence in societies and econo-

mies, Member States, Norway and Switzerland have agreed to develop a coordinated plan, which will be monitored and reviewed annually to keep it up to date.[22]

The plan maximizes the benefits of artificial intelligence for all Europeans by helping to develop a reliable AI that meets European ethical values and citizens' expectations. Europe will gradually increase its efforts in areas of public interest such as health, transport, security, education and energy, and financial services.

This strategy supports an ethical, secure and cutting-edge AI made in Europe. It builds on Europe's scientific and industrial strengths and is based on three pillars: increasing public and private investments in AI, preparing for socio-economic changes, and ensuring an appropriate ethical and legal framework. To ensure its success, coordination at European level is essential.

The plan includes a series of concrete and complementary actions at EU, national and regional levels, subject to the following:

1. Increase investment and strengthen excellence in reliable AI technologies and applications. Investments will be made in a stable regulatory environment that allows for experimentation and supports explosive innovation across the EU, ensuring the most comprehensive and best possible use of AI.
2. Common agendas for R&D and innovation in collaboration between industry and academia – building on Europe's strengths, to build partnerships with industry and Member States.
3. Development and transformation of training and vocational training programs and systems to prepare society and future generations for AI.
4. Building essential capacities in Europe to support AI, such as data sites and world-class reference sites for testing and experimentation.
5. Improving the administration of the signatory states through artificial intelligence.
6. Enforcing ethical guidelines for the development and use of AI, while fully respecting fundamental rights, in order to establish global ethical rules.
7. If necessary review the existing national and European legal framework in order to better adapt to the problems that arise.[23]

9. Ethics Guidelines for Trustworthy Artificial Intelligence

According to the guidelines, reliable artificial intelligence consists of three elements that must be met throughout the life cycle of the system:

1. it must be lawful - that is, it must comply with the laws and legal provisions in force,

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[22] Council of the European Union: *Artificial intelligence – Conclusions on the coordinated plan on artificial intelligence 6177/19*. https://data.consilium.europa.eu/doc/document/ST-6177-2019-INIT/en/pdf, January 20, 2020.

[23] Council of the European Union: *Coordinated Plan on Artificial Intelligence*. COM(2018) 795 final http://data.consilium.europa.eu/doc/document/ST-15641-2018-INIT/en/pdf December 10, 2019.

2. be ethical, i.e. ensure compliance with ethical principles and values; and
3. it must be technically and socially robust as AI systems can cause damage even in good faith and recklessness.

The strategy states that each element is necessary but none is sufficient to achieve reliable artificial intelligence alone. Ideally, the three elements work in coordination and overlap. However, in practice there may be inconsistencies between these elements – for example, sometimes the scope and content of legislation in force do not meet ethical standards. If, in practice, there is a discrepancy between certain elements, society must seek to harmonize them.

In its communications of 25 April 2018 and 7 December 2018, the European Commission set out its vision for artificial intelligence, which supports "ethical, trustworthy, modern and advanced AI in Europe".[24] In order to reinforce European values, the Commission sought to realize its vision through public and private investment in the development of artificial intelligence, and by preparing for socio-economic change, and by providing the right ethical and legal framework. [25]

In order to develop safe artificial intelligence, it is necessary to ensure the implementation of various ethical principles, such as the principle of respect for human autonomy, damage prevention and equity. Particular attention must be paid to the protection of vulnerable groups, for example, the child, the disabled, the underprivileged persons.[26]

Requirements for trustworthy artificial intelligence:

1. supporting human capacity and ensuring human oversight;
2. technical robustness and safety;
3. privacy and data governance;
4. transparency;
5. non-discrimination and the principle of equity
6. ensuring and developing societal and environmental well-being and
7. accountability.

The results and train the expert layer. At both EU and Member State levels, it should be borne in mind that there may be fundamental inconsistencies between different principles and requirements, and it is therefore, necessary to dentify, evaluate, document and communicate these results continuously.

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[24] Bertrand LIARD – Clémentine DURNEY: *The European strategy of regulation on artificial intelligence.* https://www.whitecase.com/publications/alert/european-strategy-regulation-artificial-intelligence, January 18, 2020.

[25] European Commission: *Ethics guidelines of trustworthy High-Level Expert Group on Artificial Intelligence*. https://op.europa.eu/en/publication-detail/-/publication/d3988569-0434-11ea-8c1f-01aa75ed71a1/language-en, January 6, 2020.

[26] *European Commission: Building Trust in Human-Centric Artificial Intelligence.* https://ec.europa.eu/transparency/regdoc/rep/1/2019/EN/COM-2019-168-F1-EN-MAIN-PART-1.PDF, January 10, 2020.

10. Policy & investment recommendations by AI

The recommendation to the European Union institutions and the Member States is based on a trustworthy and ethical artificial intelligence. Alongside the Strategy for Ethical Guidance on Artificial Intelligence the AI HLEG Expert Group made various recommendations and suggestions.[27]

As described above sustainability, growth and the development of ICT also plays a key role in this strategy. The development of the competences needed for the application of education and artificial intelligence is also highlighted in this Recommendation as it is essential for an efficient and rapid innovation process. People need to be able to apply improvements in their daily lives.

The Strategy emphasizes that the public sector plays a vital role in guiding the future of Europe. It is vital in promoting people-centered and reliable artificial intelligence services. Of course, in addition to the public sector it also reinforces the importance of the private sector, given that all actors need to be involved in the process in order to develop effectively.

11. White Paper – On Artificial Intelligence – A European approach to excellence and trust

The European Union's White Paper has a twofold goal: in addition to creating a legal environment conducive to innovation, it also considers reducing the risks involved. It is basically characterized by an entitlement-based approach.

For the first time, the White Paper outlines the normative framework within which the European legislator assumes the development and application of artificial intelligence. The cornerstones of the legal framework are personal autonomy, damage prevention, fairness and clarity. The basic objective of the White Paper is to create a favorable legal environment that covers the development and application of artificial intelligence, thus increasing the European Union's competitiveness on the international stage, above all vis-à-vis the United States and Asia. The other legal policy objective is to provide adequate security for the citizens of the European Union against the risks posed by artificial intelligence. Thus, the legal environment should be both efficient and secure. Simultaneous validation of these two aspects usually requires compromise solutions because they are mostly mutually exclusive.

The White Paper pays attention to the human factor in every way, not only on the injured side, but also in terms of liability. The White Paper does not assume that the artificial intelligence is completely independent of human control. It places the human factor in decision-making processes and also assumes the possible human intervention in connection with operation and control. Basically, this will allow European legislation to think in terms of the application of artificial intelligence in a societal

[27] European Commission: *Policy and investment recommendations for trustworthy Artificial Intelligence*. https://ec.europa.eu/digital-single-market/en/news/policy-and-investment-recommendations-trustworthy-artificial-intelligence, January 25, 2020.

context, and it is the only way to find solutions to the risks that arise within the existing regulatory framework, both at the Member State and the EU level.[28]

Final considerations

All in all, the Union's objective is to develop reliable artificial intelligence based on the ethical and social values based on the Charter of Fundamental Rights. People not only have to rely on AI but it must be used to advantage.[29]

The Union is striving to create an innovation-friendly ecosystem where economic operators find the infrastructure needed to invest in and disseminate artificial intelligence, research facilities, test-beds, financial tools, legal frameworks and appropriately qualified people. Overall, the headline goal is to make Europe a world leader by promoting a people-oriented approach to the development and application of modern, ethical and secure artificial intelligence.

We can also observe from the analyzed documents that AI has become a key driver of economic development. It can address a number of societal challenges, including disease management and minimizing the environmental impact of the economy. However, the social, economic, legal and ethical implications need to be assessed and prepared beforehand.

The developments in artificial intelligence in the European Union must be moving towards common goals in order to be able to be at the forefront of the technological revolution. In order to ensure our competitiveness, it is essential to determine the directions of development and to establish the conditions of use.

In recent years, the European Union and the Hungarian Government have paid particular attention to the research, development and practical application of artificial intelligence. The European Union will invest € 1.5 billion in artificial intelligence over the period 2018–2020 and this will be accompanied by an investment of up to € 20 billion through collaboration with the private sector.[30] The European Commission estimates that investment funds need to be further increased from 2020 to remain competitive. It is estimated that in addition to the EUR 1 billion a year spent through the European Horizon and Digital Europe programs, an additional EUR 20 billion a year will be needed through public and private collaborations. The European Union is a leader in the ethical use of AI, which it seeks to achieve through various forums and committees.

Based on the literature and the practical experience that has been studied, it can be concluded that artificial intelligence is rapidly transforming the world around us.

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[28] European Commission: *White Paper On Artificial Intelligence – A European approach to excellence and trust*. https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf, May 19, 2020.

[29] European Commission: *Artificial Intelligence.* https://ec.europa.eu/digital-single-market/en/artificial-intelligence, January 2, 2020.

[30] European Commission: *AI Strategy Report*. https://ec.europa.eu/knowledge4policy/ai-watch/hungary-ai-strategy-report_en, May 20, 2020.

Beyond changing the everyday, we can see that this transformation is accelerating at an exponential rate.[31]

Artificial intelligence is one of the newest areas of science that means something different to everyone. As a result of continuous interaction between smart devices, sensors and humans, we are producing, processing and storing more and more data. The internet and sensors can monitor an astounding amount of data about a person – for example, your sleeping habits, your current location, or even any click you have ever done. The growing relationship between people and smart machines also poses a significant challenge to the functioning of states and regulations.[32]

While some researchers and experts in various disciplines have some concerns, others welcome the opportunities that artificial intelligence offers. The concern of these researchers is due among other things to the belief that the transfer of independent "thinking" ability to machines necessarily gives the opportunity the machines to act contrary to the rules we have set. It is therefore important to identify the potential impacts of the issue and to establish a control and regulatory framework.

Generally speaking, AI deals with the computer-based solution of tasks that require human intelligence. In terms of tasks, there are many that we believe would require intelligence such as arithmetic but that a machine can easily solve. While there are many cases that we humans can quickly solve without thinking – for example recognizing a face – but automating the process is still very difficult.

Artificial intelligence has become an area of strategic importance and a key driver of economic development. It can provide solutions to many societal challenges, such as curing illnesses and minimizing the environmental impact of the economy.

Summarizing the analysis of the activity of the European Union strategy, we can state that the Union's objective is to develop reliable AI based on the ethical and social values based on the Charter of Fundamental Rights. People need to not only trust AI but also take advantage of it in their personal and professional lives. Europe aims to create an innovation-friendly ecosystem in which economic operators find the infrastructure needed to invest in and disseminate artificial intelligence, research facilities, test-beds, financial tools, legal framework and appropriately qualified people. Overall the goal is to make Europe a world leader in the development and application of modern, ethical and safe artificial intelligence, promoting a people-centered approach.

They aim to increase Europe's competitiveness through ongoing developments. However, it should be emphasized that the impact of individual national investments can only be maximized if there is close cooperation between the Mem-

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[31] European Commission: *Sustainable Europe Investment Plan*. COM(2020) 21 Final. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0021&from=EN, May 16, 2020.

[32] Weslei Gomes DE SOUSA – Elis Regina Pereira DE MELO – Paulo Henrique DE SOUZA BERMEJO – Rafael Araújo SOUSA FARIAS – Adalmir Oliveira GOMES: How and where is artificial intelligence in the public sector going? A literature review and research agenda. *Government Information Quarterly* Volume 36, Issue 4, October 2019.

ber States. For development, the European Union recommends that the Member States share good practice, develop synergies and work more closely and effectively together. To achieve these goals the EU encourages all concerned to participate in the development of rules for artificial intelligence technologies in order to improve the EU's competitiveness.

Bibliography

[1] Bernd W. WIRTS – Jan C. WEYERER – Carolin GEYER: Artificial Intelligence and the Public Sector—Applications and Challenges. *International Journal of Public Adiminstration* Volume 42, 2019, 596–598.

[2] Bertrand LIARD – Clémentine DURNEY: *The European strategy of regulation on artificial intelligence*. https://www.whitecase.com/publications/alert/european-strategy-regulation-artificial-intelligence, January 18, 2020.

[3] Council of the European Union: 8507/18. http://data.consilium.europa.eu/doc/document/ST-8507-2018-INIT/en/pdf, January 3, 2020.

[4] Council of the European Union: *Artificial intelligence – Conclusions on the coordinated plan on artificial intelligence 6177/19*. https://data.consilium.europa.eu/doc/document/ST-6177-2019-INIT/en/pdf, January 20, 2020.

[5] Council of the European Union: *Coordinated Plan on Artificial Intelligence*. COM(2018) 795 final, http://data.consilium.europa.eu/doc/document/ST-15641-2018-INIT/en/pdf, December 10, 2019.

[6] Digital Single Market: *Artificial Intelligence for Europe*. https://ec.europa.eu/digital-single-market/en/artificial-intelligence, January 10, 2020.

[7] Eduardo MAGRANI: *New perspectives on ethics and the laws of artificial intelligence*. https://policyreview.info/articles/analysis/new-perspectives-ethics-and-laws-artificial-intelligence, November 10, 2019.

[8] European Commission: *AI Strategy Report*. https://ec.europa.eu/knowledge4policy/ai-watch/hungary-ai-strategy-report_en, May 20, 2020.

[9] European Commission: *Artificial Intelligence*. https://ec.europa.eu/digital-single-market/en/artificial-intelligence, January 2, 2020.

[10] European Commission: *Building Trust in Human-Centric Artificial Intelligence*. https://ec.europa.eu/transparency/regdoc/rep/1/2019/EN/COM-2019-168-F1-EN-MAIN-PART-1.pdf, January 10, 2020.

[11] European Commission: *Ethics guidelines of trustworthy High-Level Expert Group on Artificial Intelligence*. https://op.europa.eu/en/publication-detail/-/publication/d3988569-0434-11ea-8c1f-01aa75ed71a1/language-en, January 6, 2020.

[12] European Commission: *EU Declaration on Cooperation on Artificial Intelligence*. https://ec.europa.eu/jrc/communities/en/community/digitranscope/document/eu-declaration-cooperation-artificial-intelligence, December 2, 2019.

[13] European Commission: *EU Member States sign up to cooperate on Artificial Intelligence*. https://ec.europa.eu/digital-single-market/en/news/eu-member-states-sign-cooperate-artificial-intelligence, December 16, 2019.

[14] European Commission: *High-Level Expert Group on Artificial Intelligence*. https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence, December 20, 2019.

[15] European Commission: *Investing in a smart, innovative and sustainable Industry. A renewed EU Industrial Policy Strategy*. COM/2017/0479 final.

[16] European Commission: *Policy and investment recommendations for trustworthy Artificial Intelligence*. https://ec.europa.eu/digital-single-market/en/news/policy-and-investment-recommendations-trustworthy-artificial-intelligence, January 25, 2020.

[17] European Commission: *Regulation of the European Parliament and of the Council establishing the Digital Europe programme for the period 2021–2027*. COM(2018) 434 final, 2018/0227(COD). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A434%3AFIN, January 4, 2020.

[18] European Commission: Shaping Europe's digital future. https://ec.europa.eu/digital-single-market/en/events/digital-day-2018. November 10, 2019.

[19] European Commission: *Sustainable Europe Investment Plan*. COM(2020) 21 Final, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0021&from=EN, May 16, 2020.

[20] European Commission: *White Paper On Artificial Intelligence – A European approach to excellence and trust*. https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf, May 19, 2020.

[21] European Parliament: *Report 27. 1. 2017 with recommendations to the Commission on Civil Law Rules on Robotics*. [2015/2103(INL)]

[22] European Union: *Declaration of Cooperation on AI.* April 10, 2018, Brussel.

[23] Stuart RUSSEL – Peter NORVIG: *Mesterséges intelligencia – Modern megközelítésben.* Panem Kft., Budapest, 2005.

[24] Tiffany Dovey FISHMAN – William D. EGGERS – Pankaj KISHNANI: *AI-augmented human services*. https://www2.deloitte.com/us/en/insights/industry/public-sector/artificial-intelligence-technologies-human-services-programs.html, December 5, 2019.

[25] Hila MEHR: *Artificial Intelligence for Citizen Services and Government.* Harvard Ash Center Technology & Democracy Fellow, https://ash.harvard. edu/files/ash/files/artificial_intelligence_for_citizen_services.pdf, May 18, 2020.

[26] Ugo PAGALLO: *The Law of Robots: Crimes, Contracts and Torts.* Dordrecht, Springer, 2013, 19–20. Doi:10.1007/978-94-007-6564-1.

[27] Weslei Gomes DE SOUSA – Elis Regina Pereira DE MELO – Paulo Henrique De Souza BERMEJO – Rafael Araújo Sousa FARIAS – Adalmir Oliveira GOMES: How and where is artificial intelligence in the public sector going? A literature review and research agenda. *Government Information Quarterly* Volume 36, Issue 4, October 2019.

[28] William D. EGGERS – Amrita DATAR – John O'LEARY: *The future of work in government*. https://www2.deloitte.com/us/en/insights/industry/public-sector/future-of-work-in-government.html, January 2, 2020.